

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A method for providing a connection between an embedded fibre optic and a surface connector, the method comprising:

 providing a substrate comprising an embedded fibre connector component;

 forming a trench from the surface of the substrate to the embedded fibre connector to expose the embedded fibre connector component; and

 forming a fibre abutment connection between the embedded fibre connector component and a fibre optic, wherein the fibre optic is for guiding radiation between the embedded fibre connector component and a surface connector.

2. (original) The method of Claim 1, further comprising providing a plurality of embedded fibre connector components.

3. (currently amended) The method of ~~any preceding claim~~ Claim 1, comprising locating an embedded element to identify the position of the embedded fibre connector component.

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4. (original) The method of Claim 3, comprising endowing the embedded element with one or more properties that can be used to identify the depth at which the embedded element is embedded in the substrate.

5. (currently amended) The method of ~~any preceding claim~~ Claim 1, wherein the trench is for guiding the fibre optic towards the embedded fibre connector component for forming the fibre abutment connection.

6. (original) The method of Claim 5, wherein the trench is formed by operating a CO laser and/or an Excimer laser operated under machine control.

7. (currently amended) The method of ~~Claim 5 or Claim 6~~, wherein the trench has a linear profile or a lazy S-shaped profile.

8. (currently amended) The method of ~~any preceding claim~~ Claim 1, wherein exposing the embedded fibre connector component comprises removing a filler material from proximal to at least a portion of the embedded fibre connector component.

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9. (currently amended) The method of ~~any preceding claim~~ Claim 1, wherein exposing the embedded fibre connector component comprises removing a plug therefrom.

10. (currently amended) The method of ~~any preceding claim~~ Claim 1, wherein forming a fibre abutment connection comprises providing self-aligning fibre optic and embedded fibre optic cores.

11. (currently amended) The method of ~~any preceding claim~~ Claim 1, wherein forming a fibre abutment connection comprises providing index matching between the fibre optic and the embedded fibre optic.

12. (currently amended) The method of ~~any preceding claim~~ Claim 1, comprising sealing the fibre abutment connection into the substrate.

13. (original) A method of manufacturing a substrate, comprising:

providing an embedded fibre optic optically connected to an embedded fibre connector component for forming a fibre abutment connection with a fibre optic, wherein the embedded fibre optic and the embedded fibre connector are embedded in the substrate; and

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forming a trench from a surface of the substrate to the embedded fibre connector to expose the embedded fibre connector component.

14. (original) The method of Claim 13, comprising providing an embedded element for identifying the position of the embedded fibre connector component proximal to the embedded fibre connector component.

15. (currently amended) The method of ~~any one of Claim 13 or Claim 14~~ Claim 13, wherein the embedded element is endowed with one or more properties that can be used to identify the depth at which the embedded element is embedded in the substrate.

16. (currently amended) The method of ~~any one of Claims 13 to 15~~ Claim 13, comprising providing a filler material proximal to at least a portion of the embedded fibre connector component.

17. (currently amended) The method of ~~any one of Claims 13 to 16~~ Claim 13, comprising providing the embedded fibre connector component with a plug.

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18. (currently amended) The method of ~~any one of Claims 13 to 17~~ Claim 13, comprising providing guide for aligning a fibre optic core with a fibre core of the embedded fibre optic.

19. (currently amended) The method of ~~any one of Claims 13 to 18~~ Claim 13, comprising providing one or more composite material layers to form the substrate.

20. (original) The method of Claim 19, wherein each composite material layer comprises respectively aligned material fibres.

21. (original) The method of Claim 20, further comprising selecting the material fibres from one or more of the following materials: plastic, carbon, glass, metal and Kevlar.

22. (currently amended) The method of ~~any one of Claims 13 to 21~~ Claim 13, comprising potting the embedded fibre connector component into a recess in a substrate support layer.

23. (currently amended) The method of ~~any one of Claims 13 to 22~~ Claim 13, further comprising providing a plurality of embedded fibre connector components within the substrate.

24. (original) A substrate comprising an embedded fibre connector component and an embedded fibre optic optically connected to the embedded fibre connector component for forming a fibre abutment connection with a fibre optic, wherein the substrate further comprises a trench formed from a surface of the substrate to the embedded fibre connector component.

25. (original) The substrate of Claim 24, further comprising an embedded element for identifying the position of the embedded fibre connector component, wherein the embedded element is sited proximal to the embedded fibre connector component.

26. (currently amended) The substrate of Claim 24 or ~~Claim 25~~, wherein the embedded element is endowed with one or more properties that can be used to identify the depth at which the embedded element is embedded in the substrate.

27. (currently amended) The substrate of ~~any one of Claims 24 to 26~~ Claim 24, further comprising a filler material provided proximal to at least a portion of the embedded fibre connector component.

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28. (currently amended) The substrate of ~~any one of Claims 24 to 27~~ Claim 24,

wherein the embedded fibre connector component is provided with a plug.

29. (currently amended) The substrate of ~~any one of Claims 24 to 28~~ Claim 24,

wherein the embedded fibre connector component is provided with a guide for aligning
a fibre optic core with a fibre core of the embedded fibre optic.

30. (currently amended) The substrate of ~~any one of Claims 24 to 29~~ Claim 24,

comprising one or more composite material layers.

31. (original) The substrate of Claim 30, wherein each composite material layer

comprises respectively aligned material fibres.

32. (original) The substrate of Claim 31, wherein material fibres comprise one or more

of the following materials: plastic, carbon, glass, metal and Kevlar.

33. (currently amended) The substrate of ~~any one of Claims 24 to 32~~ Claim 24,

wherein the embedded fibre connector component is potted into a recess in a substrate
support layer.

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34. (currently amended) The substrate of ~~any one of Claims 24 to 32~~ Claim 24, comprising a plurality of embedded fibre connector components.

35. (currently amended) A panel for a vehicle fuselage, component, body or hull, comprising the substrate according to ~~any one of Claims 24 to 34~~ Claim 24.

36. (original) A vehicle comprising a panel according to Claim 35.

37. (original) A method of manufacturing a vehicle, comprising incorporating a panel according to Claim 35 into a vehicle fuselage, component, body or hull.

38. (currently amended) A connector component for providing a fibre abutment connection between a fibre optic and the embedded fibre connector component(s) of ~~any one of Claims 24 to 34~~ Claim 24.

39. (currently amended) A machine system operable to expose the embedded fibre connector component according to ~~any preceding~~ Claim 1.

40. (original) The machine system of Claim 39, further operable to control a CO laser and/or an Excimer laser.

41. (currently amended) The machine system of Claim 39 or ~~Claim 40~~, operable under computer control.

42. (currently amended) The machine system of ~~any one of Claims 39 to 41~~ Claim 39, operable automatically to expose a trench of at least one predetermined profile.

43. (original) The machine system of Claim 42, operable automatically to:
identify a depth and position of an embedded fibre connector component;
identify a suitable predetermined trench profile for the identified depth; and
create a trench corresponding to the suitable predetermined trench profile in order to expose the embedded fibre connector component.

44. (currently amended) A program product comprising a carrier medium having program instruction code embodied in the carrier medium, the program instruction code comprising instructions for configuring at least one data processing apparatus to provide the machine system according to ~~any one of Claims 39 to 43~~ Claim 39.

45. (original) The program product according to Claim 44, wherein the carrier medium includes at least one of the following set of media: a radio-frequency signal, an optical

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signal, an electronic signal, a magnetic disc or tape, solid-state memory, an optical disc, a magneto-optical disc, a compact disc and a digital versatile disc.

46-54. (cancelled)